

SUGGESTIONS

REGARDING

THE DRYING OF PLANTS, AND THE FORMATION OF A COLLECTION OF FRUITS AND SEEDS.

Dr GRAHAM has drawn up the following suggestions, with the view of assisting the endeavours of those Gentlemen who will kindly take advantage of the opportunities they possess of forwarding the interests of Botanical Science. If it be inconvenient to attend to them, however, seeds and dried plants collected any how, and put up *en masse*, in countries the Flora of which is imperfectly known, will be found valuable, and received by him with great thankfulness. Gentlemen need not be deterred from contributing, by a conscious ignorance of Botany: most valuable collections are often received from those whose only qualifications as collectors are a willingness to oblige, and activity or influence to collect or procure the plants with which they are surrounded.

Dr GRAHAM publishes at short intervals, in the Edinburgh New Philosophical Journal, an account of every new plant which flowers in the Botanic Garden, stating from whence and from whom it was obtained, and any thing that may be remarkable in regard to its uses, cultivation, or history. While, therefore, he is most desirous that this list should be increased, those Gentlemen who may contribute to his collections may rely upon their contributions being immediately made known to the public. As his attention has been particularly turned to the Leguminosæ, this is the family which of all others he is most desirous of completing in his herbarium.

DRIED PLANTS.

A number attached to each plant, when it is laid down to be dried, may be entered in a catalogue, in which may be specified the place where the plant was gathered, the date, elevation, soil, whether on wooded or open ground, whether submersed or floating on water, and any obvious circumstance in reference to it, should there be any worth noting, as its size and local use.

The value of the specimens will be increased by their containing flowers and fruit, and being in other respects as perfect, and as near the usual size and appearance of the plant, as possible. If the plant is small, the root may be preserved; if the root-leaves differ from those on the stem, the specimen will be imperfect unless both are preserved, though the plant be too large to be taken entire.

Few specimens should exceed eighteen inches in length; but some may be folded, as Grasses, Reeds, &c. &c. In some plants, this cannot easily be done, yet a specimen of moderate size does not preserve the character. In such case, the plant may be cut into portions, containing an example of all its parts. Even detached leaves are sometimes required to complete a specimen. As barren and fertile flowers are sometimes found on different parts of the same plant, or different individuals of the same species, it is frequently necessary to attend to this in the selection of specimens. Among Ferns, there are frequently barren and fertile fronds; these should be preserved together. Native plants are by much the most desirable, where they can be had; and if ever garden specimens are taken, it will be very important to note that they are such, and to state whether they are believed to be natives of the country where they were found, or imported for cultivation.

When a collector is about to dry his plants, he will find great advantage in sitting down with the following preparations within his reach. *1st*, A strong board before him on which his specimens are to be pressed. *2d*, A collection of thinner spare boards. *3d*, At one side, a heap of paper put up in fasciculi of three or more sheets passed within each other, the backs of the sheets being all turned in one direction. *4th*, At the other side a heap of thin firm paper of the same size, put up in single sheets, the backs turned in the opposite direction. It is desirable, that these two heaps of paper should be distinguished from each other by their colour or texture; at any rate, it is necessary that the paper composing the second heap should be thin and firm; if the other be not thicker and absorbent, it will be desirable that each fasciculus should be composed of a greater number of sheets than three. *5th*, A quantity of writing paper cut into small slips, on which may be put numbers corresponding with the numbers in the catalogue: a fasciculus of the absorbent paper is then to be laid upon the board, and above this, within the fold of one of the thin sheets, one or more plants according to their size, spread out and numbered; then another fasciculus of absorbent paper, another thin sheet containing plants, and so alternately, the edges of the thin sheets being always turned to the backs of the absorbent. If the heap thus formed be large, it should be divided by intervening thin boards; a strong board should be put upon the top, and the plants dried with firm pressure, and gentle heat, if this can be easily applied. If the heap be large, a degree of pressure equalling 180 pounds at least should be applied; if very small, half this amount will be found sufficient. The absorbent paper should be removed, and dry paper of the same kind, arranged in the same way, substituted at least once daily till the plants are dry; if it can be conveniently done oftener at first, it will be better. If this cannot be done even once daily, a much larger quantity of absorbent paper should be employed. In changing the paper, it is recommended that the thin paper should never be opened, but removed along with the specimens to the dry absorbent paper, except, perhaps, the first time that this is

changed, when the edge may be carefully turned up, merely to see that the specimens have been laid down in a natural position, and neither the leaves nor any other part distorted. Unless sea-weeds be first washed repeatedly in fresh water, they will become damp again in a moist atmosphere. In travelling, it is often inconvenient to apply pressure otherwise than by strong straps, or a rope round the boards tightened by twisting. Unless the upper and under board be made much thicker than the others, and even strengthened by two cross bars fastened on one side within an inch of the ends, they will thus be split. When the collector is about to remove the damp paper, he will find great convenience in adopting the following arrangement. Let him sit down with the heap of drying plants before him, and in removing the absorbent paper let it be laid down on one side, the sheets of thin paper containing the plants on the other, and the boards among these. After the whole heap has been gone over thus, let the damp absorbent paper be removed, and an equal quantity, dry, laid down in its place. Let the whole heap of thin paper with the plants be now interlarded with the fasciculi of dry paper as at first. By this means, the beads and plants will be brought into the same relative position as before, the drier plants, if several days' collections are in hands at the same time, going to the bottom, so that, without trouble, they may be removed from the others when ready to be laid aside.

Plants may generally be collected in a japanned case, and placed between folds of paper on being carried home by the collector; but some, especially in warm climates, so soon shrivel, that it is necessary to place them among paper in a portfolio immediately after being plucked. The paper used for this purpose, should be the thin paper above directed, when, if the specimens have been laid carefully within its fold at first, all that will be required on the collector reaching home, is to incorporate the absorbent paper, and to insert the numbers corresponding with the catalogue. When some parts of a plant are very prominent, other parts, from want of pressure, are apt to shrink in drying. This may be most conveniently prevented by placing a bag, loosely filled with coarse sand, between the paper in which the plant is laid, and the board which is over it. Some plants are apt to fall to pieces at joints in drying. When this has occurred, such, when dry, should be placed on a sheet apart from all others, to prevent mixing the fragments of different species. Some plants are so brittle that they will not bear pressure, or so succulent that they will not dry under it. In this case, the flowers, or any delicate parts, may be pulled off, and dried separately; while the remainder, after being exposed to the air till it become flaccid, or soaked in boiling water, or in a few cases even boiled, will dry readily. The circumstances of the collector, however, must regulate such details; and it will always be desirable to receive many specimens though containing many duplicates somewhat indifferently pressed, rather than a few very nicely preserved. They should never be packed for sending away till quite dry, and then secured from wet, by such means as circumstances will permit.

SEEDS.

Gentlemen visiting little frequented countries can scarcely send any seeds which will not be desirable. To be preserved without injury, they require to be well dried, but without heat, before being packed. They may then be nailed up tightly in a deal-box, and, if possible, kept in a cool, airy place in the ship on the voyage. They are often completely destroyed by being heated in the hold, corked up in bottles, or soldered in air-tight cases. It is most desirable, that part of every kind of seed should be sent in the entire fruit. Succulent fruits, or very large succulent flowers, cannot be preserved in a dried state, but may be in spirits or vinegar, or in water saturated with salt. Numbers may be preserved with these also, by having them cut on slips of wood, and wrapped up with each specimen in a rag. It will be particularly obliging if the same circumstances regarding station, date, &c. be noted in regard of seeds as in regard of dried plants; and where dried specimens and seeds of the same plant are sent, if they be marked with the same number. Some seeds will not germinate if kept long dry. These may be put into damp earth in a box, and, being nailed up, will begin to vegetate on the voyage, and afterwards thrive, if the voyage do not exceed six or eight weeks, or even after a longer period, if they do not begin to germinate till some time after they have been at sea.

LIVING PLANTS.

Some living plants may be easily introduced into Britain from abroad, particularly bulbs, and many tropical parasitical plants. The bulbs will succeed best if sent dry, and the parasitical plants if fastened to the sides of, and divisions in, deal boxes, left pervious to air at the joints. Growing plants, which could not be transmitted otherwise, are often received in glazed cases. Such should always be established in the soil within the cases some weeks before they are dispatched; and immediately previous to their transmission, the earth should be well watered, and well drained through holes in the bottom of the cases, and then the glazed covers should be screwed down, the holes in the bottom plugged, and the whole rendered as nearly air-tight as may be. It is of great importance that any excess of moisture should be thoroughly drained off, before the cases are closed, as plants so transmitted are often destroyed by damp.

It will be very obliging if any of the above articles when sent, be marked "Objects of Natural History," and addressed, "DR GRAHAM, REGIUS PROFESSOR OF BOTANY, ROYAL BOTANIC GARDEN, EDINBURGH," which will save many difficulties at the Custom-House; and also if a vessel bound to a port in Scotland be preferred, where it occurs. If, further, the Collector would at the same time have the goodness to write to Dr Graham by post, almost every chance of loss or injury would be removed.